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Via Overnight Mail

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The Honorable Mathy Stanislaus
Assistant Administrator
Office of Solid Waste and Emergency Response
Mail Code: 5101T
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

RE: Lower Passaic River -- Sustainable Remedy Protectiveness

Dear Assistant Administrator Stanislaus:

Thank you again for your time meeting with representatives of the Lower Passaic River Cooperating Parties Group (CPG) on January 31, 2014. The purpose of this letter is to respond to one of the questions posed to the CPG during the meeting. The question raised was how the CPG can conclude that the Sustainable Remedy will be as or more protective than bank-to-bank dredging. This letter provides you with additional information to answer this question.

The CPG and EPA Region 2 have made progress on many difficult technical issues (e.g., sediment transport, modeling, etc.). Other difficult issues lie ahead, especially those relating to residual risk. We are working very hard on these issues, but uncertainties will continue to exist with all potential remedies for this very complex river, including a bank-to-bank remedy for the lower 8 miles. These uncertainties will only be resolved in the field. An important feature of the Sustainable Remedy is that it is premised upon EPA's adaptive management principles. As such, it is designed to manage these inherent uncertainties by focusing remediation on the areas of the River that drive risk, monitoring the results of those actions, and implementing such additional actions as may be required. Importantly, the schedule contemplated for the Sustainable Remedy will achieve protectiveness well ahead of what could be achieved by EPA Region 2's bank-to-bank approach.

There are three areas of evaluation that need to be considered: 1) the level of residual contamination that will be protective of human health and the environment; 2) the best method to determine that reasonable remediation efforts have been performed; and 3) how to confirm that the remediation will accomplish the desired outcome as quickly as possible.

1) What level of residual contamination will be protective of human health and the environment? First, it is important to note that both Region 2 and the CPG agree on the primary contaminant and pathway that represents the greatest risk to human health in the Passaic River: consumption of fish contaminated with 2,3,7,8 tetrachlorodibenzodioxin, or

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TCDD. Consuming fish contaminated with TCDD is, by far, the most significant source of risk and is the focus of the Sustainable Remedy.

The CPG and EPA Region 2 are in general agreement on the TCDD concentrations in sediment that will be achieved through targeted remediation followed by natural recovery, whether it's the Sustainable Remedy or Region 2's Focused Capping alternative. The CPG and Region 2 modelers predict that, following implementation of either of these alternatives, the average TCDD concentrations in the upper 6 inches of the River will be in the range of approximately 120 – 150 ppt. The CPG is encouraged by the convergence of the models in this instance and trusts that, with further refinement, the Region 2 and CPG modeling projections will become even closer.

However, we need time to work with Region 2 to resolve the differences in our understanding of:

1. The projected effectiveness of the bank-to-bank dredging alternatives for the lower eight miles, including the difference in the effectiveness between the Sustainable Remedy and the Region's bank-to-bank alternatives; and
2. How predicted contaminant concentration reductions in sediment will result in reductions in the levels in fish tissue, which is the primary remediation goal for the River.

The CPG has met with Region 2 and the Partner Agencies to discuss our conceptual site model for the River, with the expectation that this will result in a shared understanding of the important issues pertaining to selecting the remedy. While we expect to provide additional details of our investigations and findings to Region 2 as this process is refined, the existing data and its evaluation provides a well founded understanding of the benefits and risks associated with the Sustainable Remedy and the bank-to-bank dredging alternatives for the lower eight miles.

Region 2 has recently provided some LPR stakeholders with the most recent modeling results from Region 2 consultants, which apparently show the bank-to-bank dredging alternatives will achieve and maintain a surface sediment TCDD concentration of approximately 10 ppt. Region 2 has also told us that, based on its risk assessment, TCDD surface sediment concentrations need to be reduced to this level to be protective of human health. The CPG's modeling results demonstrate that each will achieve acceptable levels of TCDD in fish tissue, but as discussed in my February 6, 2014 letter, the FFS will not achieve significant risk reduction for at least 15 years. Further, the FFS alternatives are projected to have significantly greater cost than the Sustainable Remedy, without achieving greater risk reduction.

Region 2 has also stated that the sediment concentrations achieved by the Sustainable Remedy will not be adequate to reduce fish tissue concentrations to levels that make the fish safe to eat. In reaching this conclusion, the Region has used a biota sediment accumulation

factor (BSAF) instead of a model incorporating site-specific data. The CPG has developed a bioaccumulation model, consistent with the May 2007 RI/FS AOC under which the Lower Passaic River RI/FS is being conducted. Based on the CPG's bioaccumulation model, which has also been used at other large sediment sites, we are able to predict, with a higher degree of certainty, the fish tissue levels in various species. The fish tissue levels that will result from the TCDD sediment concentrations following the Sustainable Remedy are used as inputs into a risk calculation that uses Region 2's directive requirements for exposure scenarios. The bioaccumulation modeling results, based on actual data and using an EPA-approved model, indicate that the Sustainable Remedy will be protective.

The CPG has evaluated the physical and biological data collected throughout the River by Region 2, its Partner Agencies and by the CPG under EPA supervision, and has developed multiple lines of evidence that strongly support a biological community that is restricted to inhabiting and feeding in approximately the upper two centimeters (<1 in) of sediment. Region 2 has indicated that their default value for a bioactive zone is 15 centimeters (~6 in). To help evaluate the significance of these different approaches, the CPG directed its technical experts to use the bioaccumulation model to predict the fish tissue concentrations using TCDD sediment concentrations calculated for both the upper 2 centimeters and for the upper 15 centimeters. Although calculated risks for the adult angler RME (the exposure pathway of greatest human health risk) using the upper 15 centimeters are slightly greater ($\sim 8 \times 10^{-5}$) than those using the upper 2 centimeters ($\sim 4 \times 10^{-5}$), they are both in the range of reasonably acceptable protectiveness established by EPA (10^{-4} to 10^{-6}). Moreover, the calculated risks following implementation of the Sustainable Remedy are equivalent to those calculated for Region 2's FFS bank-to-bank remedy, although the FFS remedy may not achieve the Region's target risk for the reasons outlined below and in my February 6 letter. Nonetheless, the CPG is able to conclude that the Sustainable Remedy (using a bioavailable zone of 2 cm or 15 cm) results in a calculated risk at or below 1×10^{-4} increased risk of cancer with an effective carp management program.

2) How to best determine that sufficient remediation has been performed? Both the CPG and Region 2 are conducting important analyses with the shared goal of selecting the best remedy for the River. Although the CPG is encouraged that we are finding common ground on many of the technical issues, it is also not surprising that Region 2 and the CPG find ourselves with differences on key issues. The fact is, the River is complicated and, despite using the best tools available, there remain uncertainties regarding the effectiveness and impacts of both the Sustainable Remedy and the bank-to-bank dredging alternatives. Only by conducting a remedy and monitoring the results will there be certainty concerning its effectiveness.

In addition, there are several advantages to the Sustainable Remedy that should be factored into the remedy selection. The Sustainable Remedy will address areas in the entire 17 miles of the Lower Passaic River that contain the highest level of contamination in surface sediments. Addressing these areas will take three to five years, resulting in a rapid reduction of contaminant levels in the sediment that is posing the majority of the risk. By addressing all

direct exposure scenarios in a shorter period of time, contaminant levels in fish will be reduced in a shorter period of time than with the FFS alternatives, which are more complex, have longer dredging durations and only address the lower 8 miles of the 17-mile Lower Passaic River Study Area (LPRSA).

Perhaps the most important advantage of the Sustainable Remedy, which will not exist with the bank-to-bank remedies, is the critical ability to learn from and adapt to how the River responds to the remedy. EPA has recognized the complexities inherent in remedies such as those envisioned for the Passaic River, and has recommended the use of adaptive management for large, complex sediment sites. The CPG is developing a structured plan to monitor the remediation and, if necessary, develop additional remedial measures to ensure that the remedy will meet the threshold criteria of protectiveness. We understand that clear and measurable goals and associated metrics are critical to determining whether or not goals are reached. The Sustainable Remedy incorporates a post-remediation monitoring program that includes short-term targets and planned responses if those goals are not met. The bank-to-bank remedies, by their very nature, do not allow testing of the remedy; there is no ability to adjust the program in time to avoid a massive failure and delays in completing the remediation.

3) How to be certain that the remediation will accomplish the desired outcome as quickly as possible? The TCDD levels projected by Region 2 simply cannot be achieved or maintained. As we presented at the meeting, the CPG modeling projects that surface sediment concentrations of TCDD in the lower eight miles will be in the range of 70 – 80 ppt following completion of the bank-to-bank remedies. Sediment from upriver and Newark Bay, both of which contain TCDD at levels much greater than the post-remediation concentration projected by Region 2, will recontaminate the lower eight miles. Practical implementation issues, including resuspension during dredging and the physical inaccessibility of significant portions (>10%) of the River because of utilities, bridges and bulkheads, will further limit the effectiveness of the bank-to-bank dredging remedies. Even disregarding the unique site-specific issues, there is no precedent where a large scale dredging remedy has ever achieved, let alone maintained, a 10 ppt surface concentration.

The CPG has concluded that the modeling, risk assessments, and our thorough understanding of the River support our conclusion that the Sustainable Remedy will result in a successful remediation of the River. The Sustainable Remedy provides a better solution to the uncertainties associated with such a large remediation and inherent in its adaptive design is the guarantee of a successful outcome.

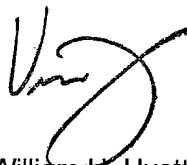
Region 2 has stated that the CPG has yet to provide all of the bases for our conclusions and, therefore, has many questions regarding the Sustainable Remedy. We have provided all requested information in a timely manner and we will continue to do so. In addition, all of the information and analyses supporting the conclusions we have developed will be provided in the RI/FS for the entire 17 mile LPRSA (including the lower 8 miles addressed by FFS) currently scheduled for submission to Region 2 at the end of 2014. EPA should not issue the FFS until

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after the RI/FS is completed. At that time, Region 2 and EPA Headquarters can fully evaluate the CPG's conclusions and recommendations with the benefits of all of the data collected during the RI and the analyses conducted in the FS to evaluate remedial alternatives.

We appreciate the time provided to us on January 31, 2014 to discuss this important matter.

Sincerely,

A handwritten signature in black ink, appearing to read 'W. Hyatt, Jr.', with a stylized flourish at the end.

William H. Hyatt, Jr.
Common Counsel to CPG

cc: Lisa Feldt, Associate Deputy Administrator
Barry Breen, Principal Deputy Assistant Administrator for OSWER
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